REMARKS

Reconsideration of the subject application is respectfully requested in light of the amendments above and the comments which follow. Claims 1, 3-5, 16, 18, 19 and 21-23 are pending

CLAIM REJECTIONS UNDER 35 U.S.C. §103

Claims 1, 3-5, 16, 18-19 and 21-23 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Publication No. 2002/0015890 to Nakura (hereafter "*Nakura*") in view of U.S. Patent Publication No. 2003/0113626 to Maeda et al. (hereafter "*Maeda et al.*"), and further in view of U.S. Patent No. 5,247,349 to Olego et al. (hereafter "*Olego et al.*") on the grounds set forth in paragraph 3 of the Official Action. In addition, Claims 1, 3-5, 16, 18-19 and 21-23 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Maeda et al.* and further in view of *Nakura*, and further in view of *Olego et al.* on the grounds set forth in paragraph 4 of the Official Action. These rejections will be addressed together because the same are is cited in both proposed combinations. For at least the reasons noted below, these rejections should be withdrawn.

The present rejections over the disclosures in *Nakura*, *Maeda et al.* and *Olego et al.* are improper because a *prima facie* case of obviousness has not been established. In order to establish a case of *prima facie* obviousness, three basic criteria must be met: first, there must be some suggestion or motivation to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Third, the prior art references must teach or suggest all of the claim limitations. See MPEP §§2142-2143. Here, a *prima facie* case of

obviousness has not been established because at least the first and the second elements have not been met, e.g., there is no suggestion or motivation to modify the reference or combine reference teachings and there is no reasonable expectation of success.

Applicants' independent claims 1, 16 and 19 recite, *inter alia*, that a lithium/transition metal pnictide phase is depicted by formula (I): $Li_xM_yPn_4$ wherein Pn represents a pnictogene element selected from the group consisting of P, As, and Sb (claim 1), P or As (claims 16 and 19).

None of the references cited in the Official Action as the basis for the obviousness rejection explicitly disclose material having the formula $Li_xM_yPn_4$ with Pn being P, As or Sb as recited in the present claims. For example and as noted in the Official Action at page 4, line 13, and page 7, line 4, "neither *Nakura et al.* [sic] nor *Maeda et al.* disclose the specific pnictogene element [of the rejected claims]" (emphasis added).[1]

The Examiner, in noting the missing claim element in the proposed combination of *Nakura* and *Maeda et al.*, has newly cited *Olego et al.* in the proposed combination. However, the addition of the *Olego et al.* patent in the combination is still deficient as an obviousness rejection for the following reasons:

Olego et al. relates to passivation and insulation of amorphous films deposited on semiconductors. The patent is essentially directed to films based on pure pnictides (e.g. pure phosphorous films), although "inter-metallic semiconductor

[1] Rather as previously noted by the Applicants, *Nakura* discloses negative electrodes comprising nitrides as represented by $Li_xA_yMe_zN$. See, e.g., paragraphs [0012] and [0016]. Disclosed positive electrodes are lithium-containing transition metal oxides. See, e.g., paragraph [0034]. *Maeda et al.* discloses an active material for use in lithium secondary batteries. Examples of negative electrode materials include lithium nitride metal compounds represented by $Li_xM_yN_z$ and composite metal oxides represented by $A_xN_yO_p$. See, paragraph [0060]. Examples of positive electrode materials include composite metal oxides represented by $A_xN_yN_zO_p$. See, paragraph [0061].

comprising a pnictide" are also mentioned (col. 5, lines 12-15). These intermetallic compounds are semiconductors based on a group III element (B, Al, Ga, In or Tl) and a so-called "pnictide". Applicants note that the pnictide recited in *Olego et al.* is actually a pnictogen element in the sense of the instant application, namely N, P, As, Sb and Bi. (col, 9, lines 11-23)

1. There is no motivation for the proposed combination and/or there is no expectation of success for the proposed combination

Olego et al. indifferently recites pnictogen elements N, P, As, Sb and Bi as possible candidates in the mentioned intermetallic compounds. From this, the Examiner reasons that *Olego et al.* is evidence that all pnictogen elements should be regarded as equivalent. (See e.g., page 5, lines 4-8 of the Official Action). The Examiner then concludes that the teaching of *Olego et al.* would have led the skilled person to replace nitrogen of the nitrides from the combination of *Nakura* and *Maeda et al.* by another pnictogen element (P, As, Sb or Bi), to arrive at Applicants' claimed electrode.

The Examiner's position is respectfully traversed.

First, it is respectfully asserted that *Olego et al.* clearly does not teach that all pnictides are equivalent. *Olego et al.* teaches only that an inter-metallic film based on any pnictogen element acts as a passivation or insulation layer, whatever the pnictogen used. The *Olego et al.* patent does not specify that each pnictognen element N, P, As, Sb or Bi is equivalent, e.g., leads to an equivalent quality of the effect in this scope.

Olego et al. does not specify that the nature of the pnictogen may be interchangeably used in other applications of the intermetallic pnictide. *Olego et al.* merely describes the use of a pnictide film for providing an insulating or passivation layer on a semiconductor. Other uses of pnictide films are not contemplated by *Olego et al.* Especially, *Olego et al.* does not contain any information relative to conductive materials such as electrodes, since it aims at providing insulating materials. Therefore, it is outside of the teachings of the present document to deduce from *Olego et al.* any equivalency of the pnictogens elements in a pnictide used for preparing an electrode as presently claimed.

Moreover, the so-called "intermetallic" compounds of *Olego et al.* are actually pnictide based on a single metal. A pnicitide phase based on two metals (as presently claimed, see, e.g., Formula I) is not contemplated. Nor would one of ordinary skill in the art have been motivated, or expected success even if attempted, to apply the teachings and suggestions in *Olego et al.* to the proposed combination of *Nakura* and *Maeda et al.* to arrive at the present claims. Furthermore, lithium pnictides are not described nor suggested. Thus, "intermetallic compounds" of *Olego et al.* are quite distinct from the intermetallic lithium/transition metal pnictide of the present claims.

In other words, assuming, *arguendo*, the motivation for the proposed combination, at the very best it could be considered that pnictogen elements as disclosed in *Olego et al.* may be interchangeably used in monometallic pnictides based on metallic elements of Group III. However, this equivalency of the pnictides clearly cannot be transposed to multimetallic pnictides based on lithium described in other cited documents because conclusion of the equivalence and/or

interchangeability of the materials extends beyond what is supported in the document.

Further, in contrast to the conclusions relied upon by the Examiner to support equivalence/interchangeability, one actually observes that, in a multimetallic pnictide as used in the present claims, all pnictogen are not equivalent. As stressed previously in response to the previous Office Action, the use of a pnictide based on P, As and Sb according to claim 1 and based on P or As according to claims 16 and 19 leads to electrodes having improved properties in comparison with electrodes implementing nitrides.[2]

Thus, even if, *arguendo*, one were to consider that *Olego et al.* teaches an equivalency of pnictogen elements in the general case for monometallic pnictides based on metallic elements of Group III, the enhanced properties found by the present Applicants (and not taught by the prior art) would contradict this teaching in the specific case of electrode materials according to the present claims, and therefore should be considered as unexpected, in further support of patentability over the proposed combination.

For at least the above noted reasons, the rejections have failed to establish a *prima facie* case of obviousness and should be withdrawn. See MPEP §§2142-2143.

The remaining pending claims in this application depend either directly or indirectly from independent claims 1, 16 and 19. Accordingly, the present rejection of these dependent claims is also improper for at least the same reasons as noted

[2] Both of the cited documents disclose the use of pnictides only in the form of nitrides. The documents do not teach, disclose, or suggest the use of P, As, or Sb instead of N nor do they disclose, teach or suggest that the use of such alternative elements may lead to equivalent or improved properties.

above with respect to the independent claims. Accordingly, withdrawal of these rejections is respectfully requested.

CONCLUSION

From the foregoing, further and favorable action in the form of a Notice of Allowance is earnestly solicited. Should the Examiner feel that any issues remain, it is requested that the undersigned be contacted so that any such issues may be adequately addressed and prosecution of the instant application expedited.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

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By: _____
Jeffrey G. Killian
Registration No. 50,891

P.O. Box 1404
Alexandria, Virginia 22313-1404
(703) 836-6620